Qitong Gao

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EDUCATION

Duke University – Durham, NC   **Aug 2019 - May 2024**
- _PhD in Electrical and Computer Engineering with **Best Dissertation Award** (**1 out of 33** departmental PhD graduates)._
- _GPA: 3.88._ Advisor: Miroslav Pajic.
- Research interest: Deep Learning, Reinforcement Learning and Computer Vison. Specifically, Deep Learning for Image and Sequence Analysis, Reinforcement Learning for Control of Robotics, Medical and Cyber-Physical Systems, and other AI topics.

Duke University – Durham, NC   **Aug 2016 - May 2018**
- _Master of Science._ _GPA: 3.87._ Robotics Focus, Mechanical Engineering & Materials Science Dept., Pratt School of Engineering
- _Thesis_: "Deep Reinforcement Learning with Temporal Logic Specifications". Advisor: Michael Zavlanos

Tianjin University – Tianjin, China   **Sep 2012 - Jul 2016**
- _Bachelor of Engineering._ _GPA: 3.62._ **Ranking: 2 out of 54** students in the department graduated in 2016
  Processing Equipment and Control Engineering Dept., School of Chemical Engineering
- _Honors_: National Scholarship (Award to **top 1%** students in School of Chemical Engineering); Honored Graduate

PROFESSIONAL EXPERIENCES

Netflix — Los Gatos, CA. _Research Scientist 4_.   **July 2024 - Current**
- Research and develop state-of-the-art personalization algorithms that tailors the asset selection to Netflix subscribers.
- Prototype, implement and experiment in ranking and explore-exploit contextual bandit systems to enable context-aware asset selection within the Netflix product.

Netflix — Los Gatos, CA. _Machine Learning Intern (Algorithms Engineering — Core Recommendations Team)_.   **June 2023 - Aug 2023**
- Developed off-policy deep reinforcement learning framework to position specific rows in the homepage shown to users upon login. **Outperformed the production model by 15%** in terms of offline replay metric.
- Proposed and implemented various off-policy evaluation methods to determine the policies to be deployed for AB-testing.

Meta (previously Facebook) — New York City, NY. _Applied Research Scientist Intern_.   **June 2022 - Sep 2022**
- Improved the news feed system for a key enterprise product (Workplace) developed by Meta, through devising various feature engineering, modeling, optimization, and deep learning techniques. Results shown significant improvements in offline metrics, and the work had been carried on by full-time employees for further tuning and online testing. **The model had finally been deployed to production** (~4 months after the internship is finished).
- Worked with colleagues from cross-functional teams (engineers, data scientists, project managers etc.) to quantify the scale and potential impact of the project.

Facebook — Menlo Park, CA. _Applied Research Scientist Intern_.   **June 2021 - Sep 2021**
- Developed machine learning models at scale to process and analyze internal multi-modal sales data, which can help boost sales for one of Facebook's major enterprise products.
- Coordinated and communicated with co-workers from research, data engineering and business team to setup data pipelines.

PEER-REVIEWED PUBLICATIONS

_18_. G. Gao, X. Yang, **Q. Gao**, X. Yang, S. Ju, M. Pajic and M. Chi. **Off-Policy Selection for Initiating Human-Centric Experimental Design**. Accepted to Neural Information Processing Systems (NeurIPS) 2024.

_17_. G. Gao, **Q. Gao**, X. Yang, S. Ju, M. Pajic and M. Chi. **On Trajectory Augmentations for Off-Policy Evaluation**. _In proceedings of_ International Conference on Learning Representations (ICLR) 2024.

_16_. **Q. Gao**, G. Gao, J. Dong, V. Tarokh, M. Chi and M. Pajic. **Off-Policy Evaluation for Human Feedback**. _In proceedings of_ Neural Information Processing Systems (NeurIPS) 2023.

_15_. S. L. Schmidt, A. H. Chowdhury, K. T. Mitchell, J. J. Peters, **Q. Gao**, H-J Lee, K. Genty, S-C Chow, W. M. Grill, M. Pajic, D. A. Turner. **At Home Adaptive Dual Target Deep Brain Stimulation in Parkinson Disease with Proportional Control**. _In_ Brain 2023, awad429.

_14_. **Q. Gao**_,_ G. Gao_,_ M. Chi and M. Pajic. **Variational Latent Branching Model for Off-Policy Evaluation.** _In proceedings of_ International Conference on Learning Representations (ICLR) 2023.

_13_. **Q. Gao**_,_ S. L. Schmidt, A. Chowdhury, G. Feng, J. J. Peters, K. Genty, W. M. Grill, D. A. Turner, M. Pajic. **Offline Learning of Closed-Loop Deep Brain Stimulation Controllers for Parkinson Disease Treatment.** _In proceedings of_ International Conference on Cyber-Physical Systems (ICCPS) 2023. _**Best paper award runner-up (2nd place) — top 2%**_.

_12_. G. Gao_,_ **Q. Gao**_,_ X. Yang_,_ M. Pajic, and M. Chi. **A Reinforcement Learning-Informed Pattern Mining Framework for Multivariate Time Series Classification.** _In proceedings of_ International Joint Conference of Artificial Intelligence (IJCAI) 2022.

_11_. **Q. Gao**_,_ D. Wang, J. Amason, S. Yuan, C. Tao, R. Henao, M. Hadziahmetovic, L. Carin, M. Pajic. **Gradient Importance Learning for Incomplete Observations.** _In proceedings of_ International Conference on Learning Representations (ICLR) 2022.

_10_. **Q. Gao**_,_ S. L. Schmidt, K. Kamaravelu, D. A. Turner, W. M. Grill, M. Pajic. **Offline Policy Evaluation for Learning-based Deep Brain Stimulation Controllers.** _In proceedings of_ International Conference on Cyber-Physical Systems (ICCPS) 2022.

_9_. A. Khazraei, S. Hallyburton, **Q. Gao**_,_ Y. Wang_,_ M. Pajic. **Learning-Based Vulnerability Analysis of Cyber-Physical Systems.** _In proceedings of_ International Conference on Cyber-Physical Systems (ICCPS) 2022.

_8_. T. Lee, M. Hu, **Q. Gao**_,_ J. Amason, D. Borkar, D. D'Alessio, M. Canos, A. Shariff, M. Pajic, M. Hadziahmetovic. **Evaluation of A Deep Learning Supported Remote Diagnosis Model for Identification of Diabetic Retinopathy using Wide-field Optomap.** _In_ Annals of Eye Science.

_7_. Y. Wang, **Q. Gao**, M. Pajic. **Learning Monotone Dynamics by Neural Networks.** _In proceedings of_ American Control Conference (ACC) 2022.

_6_. **Q. Gao**, J. Amason, S. W. Cousins, M. Pajic, and M. Hadziahmetovic. **Automated Remote Diagnosis Tool for Multi-modal Identification of Retinal Pathology.** _In_ ARVO's Journal on Translational Vision Science & Technology (TVST). Vol.10, 30. May 2021.

_5_. **Q. Gao**, M. Pajic and M. M. Zavlanos. **Deep Imitative Reinforcement Learning for Temporal Logic Robot Motion Planning with Noisy Semantic Observations.** _In proceedings of_ International Conference on Robotics and Automation (ICRA). June 2020. Paris, France.

_4_. **Q. Gao**, Y. Xu, J. Amason, A. Loksztejn, S. W. Cousins, M. Pajic, and M. Hadziahmetovic. **Automated Recognition of Retinal Pigment Epithelium Cells on Limited Training Samples using Neural Networks.** _In_ ARVO's Journal on Translational Vision Science & Technology (TVST). Vol.9, 31. June 2020.

3. **Q. Gao**, M. Naumann, I. Jovanov, V. Lesi, K. Kamaravelu, W. M. Grill, and M. Pajic. **Model-Based Design of Closed Loop Deep Brain Stimulation Controller using Reinforcement Learning.** *In proceedings of* International Conference on Cyber-Physical Systems (ICCPS). April 2020. Sydney, Australia.

2. T. Yan, X. Li, G. Chen, **Q. Gao**, G.Q. L, X. Chen. **Effects of thermal aging on long-term reliability and failure modes of nano-silver sintered lap-shear joint**. *In* International Journal of Adhesion and Adhesives 97 (2020): 102488.

1. **Q. Gao**, D. Hajinezhad, Y. Zhang, Y. Kantaros, and M. M. Zavlanos. **Reduced Variance Deep Reinforcement Learning with Temporal Logic Specifications.** *In proceedings of* International Conference on Cyber-Physical Systems (ICCPS). April 2019. Montreal, Canada.

PRESENTATIONS & TALKS

2022 NSF Cyber-Physical Systems Principal Investigators' Meeting, *Poster*, **Offline Learning for Medical Cyber Physical Systems**, Nov 2022, Arlington, VA USA.

2019 NSF Cyber-Physical Systems Principal Investigators' Meeting, *Poster*, **Reinforcement Learning for Parkinson's Disease Treatment with Deep Brain Stimulation (DBS)**, Nov 2019, Arlington, VA USA.

2019 AFOSR Center of Excellence "Assured Autonomy in Contested Environments" Meeting, *Poster*, **Deep Reinforcement Learning with Temporal Logic Specifications**, Oct 2019, Duke University, Durham, NC USA.

PROFESSIONAL SERVICES

Reviewer: ACM Tran. on Computing for Healthcare '20,'21, IEEE Conf. on Decision and Ctrl. '18-'23, American Ctrl. Conf. '21-'23, TVST '21, Neural Computation '22, ICCPS '22, IEEE Tran. on AI '23, Current Eye Research '23.

EXTRACURRICULAR

IXL Innovation Olympics competition, *Student Consultant* – Duke University   Mar 2017 - Jun 2017
- Developed supply chain optimization strategies for an Europe based aircraft manufacturer in the list of ***fortune 500 companies***.
- Targeted the key issues in the supply chain and proposed a novel business model that was tailored to the client's demand.

Jordan High School Science Fair Volunteer, *Judge* – Durham, NC   Nov 2016
- Evaluated and provided feedback on high school student science projects as a judge.
- Cooperated with other panel members to select outstanding projects that would win the award.

Social Entrepreneurship Program, *Student Analyst* – Duke University   Sep 2016 - Dec 2016
- Collaborated with a multi background 6-people team to evaluate the feasibility and create methodology of setting up an elementary charter school in Durham. Analyzed financial statement based on successful and unsuccessful schools and carried out a detailed financial strategy report independently. Received high evaluation from the client.

SKILLS

Programming/Software: Python, MATLAB, R, Linux Shell, C++, C#, Tensorflow (*both tf.slim and Keras*), Pytorch, OpenAI Gym, ROS

Coursework: Probabilistic Machine Learning (*A*), Artificial Intelligence (*A*), Introduction to Algorithms (*A*), Machine Learning in Imaging (*A*), Bayesian and Modern Statistics (*A-*), Applied Stochastic Processes (*A+*), Introduction to Robotics (*A-*), Distributed Robotics (*A*), Numerical Analysis (*A*), Statistical Inference (*A-*).